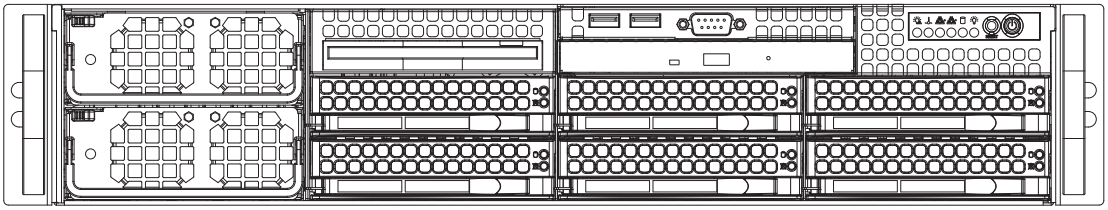
SUPERMICRO®

SUPERSERVER 2042G-TRF
SUPERSERVER 2042G-6RF



USER'S MANUAL

Revision 1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 2042G-TRF/6RF. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 2042G-TRF/6RF is a high-end quad processor server based on the SC828TS+-R1400LPBP 2U rackmount server chassis and the Super H8QG6/i-F serverboard. The H8QG6/i-F supports four AMD 6000 processors. Please refer to our web site for an up-to-date list of supported processors.

The SuperServer 2042G-TRF contains an H8QGi-F serverboard without SAS2 features while the SuperServer 2042G-6RF contains an H8QG6-F serverboard with SAS2 features.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super H8QG6/i-F serverboard and the SC828TS+-R1400LPBP chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 2042G-TRF/6RF into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 2042G-TRF/6RF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the H8QG6/i-F serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC828TS+-R1400LPBP 2U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer 2042G-TRF/6RF is a high-end server that is comprised of two main subsystems: the SC828TS+-R1400LPBP 2U server chassis and the H8QGi/6-F quad processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 2042G-TRF/6RF (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 2042G-TRF/6RF, as listed below:

- One (1) Mini-SATA to USB adapter for slim DVD (CDM-USATA-G-O-P)
- One (1) Slim SATA DVD kit (MCP-260-00027-0N)
- One (1) Black slim SATA DVD, TEAC or Panasonic (DVM-TEAC-DVD-SBT or DVM-PNSC-DVD-SBT)
- Four (4) 2U Passive CPU Heatsinks for AMD Socket G34 (SNK-P0043P)
- One (1) USB/COM port tray (MCP-220-00007-01)
- SAS/SATA Accessories:
  One (1) SAS/SATA backplane (BPN-SAS-828TQ)
  Two (2) 61.5-cm 8pin to 8pin cables for SGPIO (CBL-0157L-01)
  Two (2) 48-cm SATA round cables (CBL-0227L)
  Two (2) 55-cm SATA round cables (CBL-0228L)
  Two (2) 65-cm SATA round cables (CBL-0230L)
  One (1) 70-cm Internal USB cable for slim USB DVD-ROM (CBL-0341L)
  Six (6) hot-swap drive carriers (MCP-220-00001-01)

1-2 Serverboard Features

At the heart of the SuperServer 2042G-TRF/6RF is one H8QGi/6-F quad processor serverboard, which is based on the AMD SR5690/SP5100 chipset.

Below are the main features of the serverboards.

Processors

The H8QGi/6-F supports four AMD Opteron 6100 series (Socket G34 type) processors. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The H8QGi/6-F has thirty-two (32) single/dual/tri/quad channel DIMM slots supporting up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/non-ECC SDRAM.. See Chapter 5 Section 6 for more details on installing memory into the system.

SAS (AS-2042G-6RF Only)

An LSI 2008 SAS2 controller is integrated into the H8QG6-F to provide an eight port SAS (Serial Attached SCSI) subsystem, which is RAID 0, 1, and 10 supported. (Optional RAID 5 support is available with the iButton installed.) The SAS drives are hot-swappable units. SR and IT modes are supported but not IR.

Note: The operating system you use must have RAID support to enable the hotswap capability and RAID function of the SAS drives.

Serial ATA

The South Bridge (SP5100) of the chipset includes a Serial ATA controller for six Gb/s SATA drives. The hot-swappable SATA drives are connected to a backplane that provides power, bus termination and configuration settings. RAID 0, 1, and 10 are supported. Refer to the support area of our web site for procedures on setting up RAID on your system.

PCI Expansion Slots

The H8QGi/6-F board has two PCI Express 2.0 x16 slots and two PCI Express 2.0 x8 slots or one UIO slot.

Ethernet Ports

An Intel® network controller is integrated into each of the serverboards to support two Gigabit LAN ports (100/1000Base-T/1000BaseTX, RJ45 output).

Onboard Controllers/Ports

Onboard I/O backpanel ports on the serverboard include one COM port, a VGA port, two USB ports, a dedicated IPMI LAN port and two Gigabit LAN (NIC) ports.

Graphics Controller

The H8QGi/6-F features an integrated Matrox G200eW graphics chip, which includes 16 MB of DDR2 memory.

IPMI

IPMI (Intelligent Platform Management Interface) is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro server platforms. IPMI allows server administrators to view a server's hardware status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive.

UIO

The H8QG6/i-F is a specially-designed serverboard that features Supermicro's UIO (Universal I/O) technology. UIO serverboards have a PCI-Express x8 signals that can support PCI-E cards or any one of several types of UIO card types to add SAS ports, additional LAN ports, InfiniBand®, etc. to the serverboard. This allows you to tailor the serverboard to your own needs.

Note: the server does not come with a UIO card installed.

Other Features

Other onboard features that promote system health include voltage monitors, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC828TS+-R1400LPBP server chassis.

System Power

The SC828TS+-R1400LPBP features a redundant (two separate power modules) 1400W high-efficiency power supply with I^2C. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

SAS/SATA Subsystem

The SC828TS+-R1400LPBP chassis was designed to support six hot-swappable SAS or SATA hard drives.

Front Control Panel

The control panel on the SuperServer 2042G-TRF/6RF provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included. In addition, two USB ports and a COM port have been incorporated into the front of the chassis for convenient access.

I/O Backplane

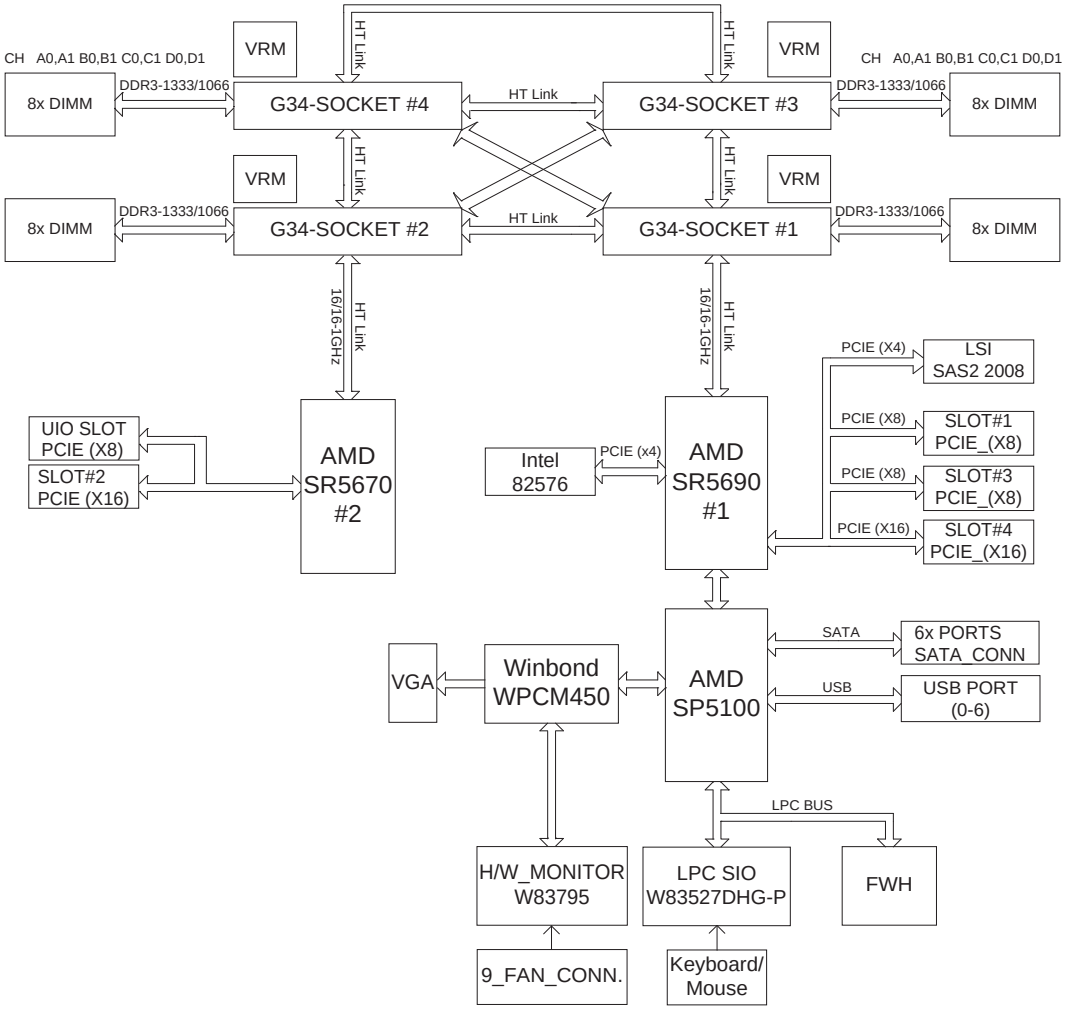
The SC828TS+-R1400LPBP is an ATX form factor chassis designed to be used in a 2U rackmount configuration. The I/O backplane includes one COM port, a VGA port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports. One standard size PCI expansion card may be added to the system.

Cooling System

The SC828TS+-R1400LPBP chassis has an innovative cooling design that includes six 8-cm heavy-duty hot-swap fans located in the middle section of the chassis. The power supply module also includes a cooling fan. All chassis and power supply fans operate continuously. An air shroud channels the airflow from the system fans to efficiently cool the processors and memory.

Figure 1-1. AMD SR5690/SP5100 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-4 Contacting Supermicro

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Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your 2042G-TRF/6RF up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the 2042G-TRF/6RF was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 2042G-TRF/6RF. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the 2042G-TRF/6RF was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow the hot plug SAS drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the 2042G-TRF/6RF into a rack unit with the rack rails provided. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself. Two pairs of short brackets to be used on the front side of the outer rails are also included.

Installing the Inner Rails

Both the left and right side inner rails have been pre-attached to the chassis. Proceed to the next step.

Installing the Outer Rails

Begin by measuring the distance from the front rail to the rear rail of the rack. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack. Secure the short bracket to the front side of the outer rail with two M4 screws and the long bracket to the rear side of the outer rail with three M4 screws. Repeat these steps for the left outer rail.

Locking Tabs

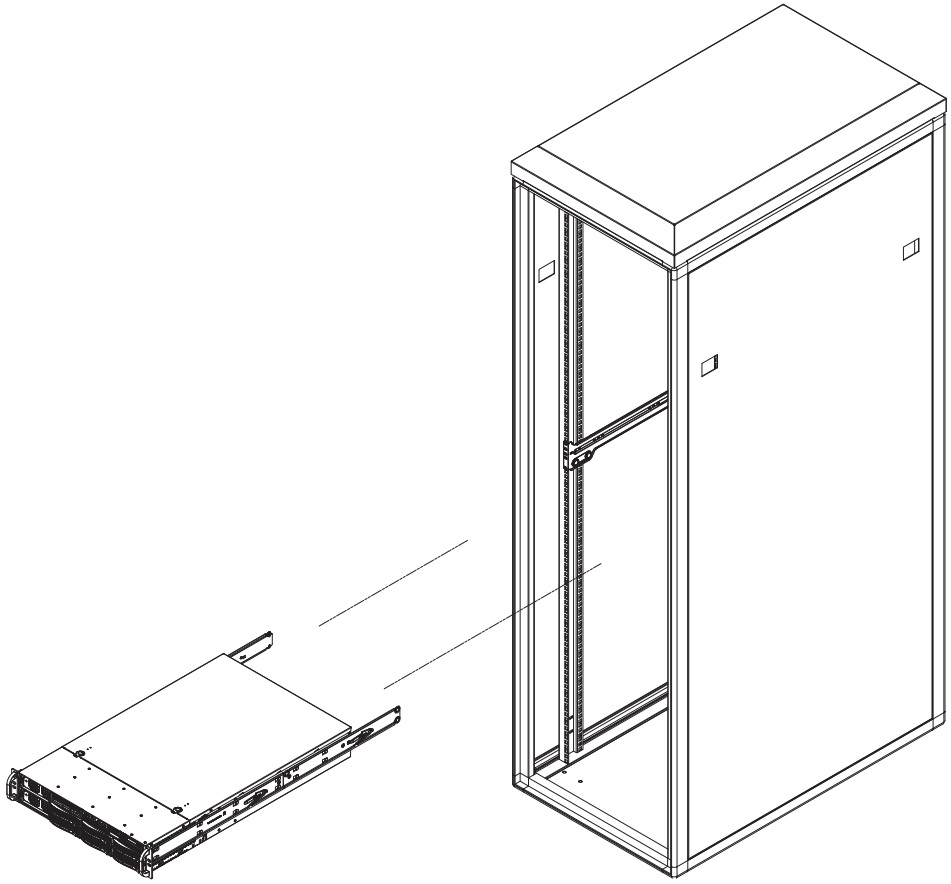
Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-1.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

Figure 2-1. Installing the Server into a Rack



2-5 Checking the Serverboard Setup

After you install the 2042G-TRF/6RF in the rack, you will need to open the top cover to make sure the serverboard is properly installed and all the connections have been made.

Accessing the Inside of the System

1. First, release the retention screws that secure the system to the rack.

2. Grasp the two handles on either side and pull the system straight out until it locks (you will hear a "click").

3. Next, release the thumbscrew at the middle rear of the top cover. Then depress the two buttons on the top of the chassis to release the top cover.

4. Push the cover away from you (toward the rear of the chassis) until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

5. To remove the system from the rack completely, depress the locking tabs in the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

Checking the Components and Setup

1. You may up to four processors already installed in the serverboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

2. Your server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. If desired, you can install an add-on card to the system. See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

2-6 Preparing to Power On

Next, you should check to make sure the peripheral drives and the SAS drives and SAS backplane have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessable from the front of the server. For servicing the DVD-ROM and floppy drives, you will need to remove the top chassis cover. The SAS disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. A slim DVD-ROM and floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a DVD-ROM and/or floppy disk drive to the system.

3. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SAS drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by six 8-cm fans and an air shroud. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

1. Plug the power cords from the power supplies unit into a high-quality power strip that offers protection from electrical noise and power surges.

2. It is recommended that you use an uninterruptible power supply (UPS).

3. Finally, depress the power on button on the front of the chassis.

Notes

Chapter 3

System Interface

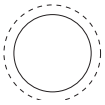
3-1 Overview

There are several LEDs on the control panel as well as others on the SAS drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

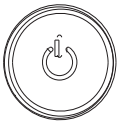
There are two push-buttons located on the front of the chassis: a reset button and a power on/off button.

RESET



Reset

Use the reset button to reboot the system.



Power

The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC828TS+-R1400LPBP chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power Fail

Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally

Overheat/Fan Fail

When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.

NIC2

Indicates network activity on GLAN2 when flashing.

NIC1

Indicates network activity on GLAN1 when flashing.

HDD

Indicates IDE channel activity. On the 2042G-TRF/6RF this light indicates SAS and/or DVD-ROM drive activity when flashing.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SAS Drive Carrier LEDs

Each SAS drive carrier has two LEDs:

- **Green:** When illuminated, the green LED on the front of the SAS drive carrier indicates drive activity. A connection to the backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The SES2 compliant backplane activates the red LED to indicate a drive failure. If one of the SAS drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SAS drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 2042G-TRF/6RF from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the operating system first and then unplug the power cords. The unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (part # CR2032). Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the 2042G-TRF/6RF clean and free of clutter.

- The 2042G-TRF/6RF weighs approximately 65.5 lbs. (29.8 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

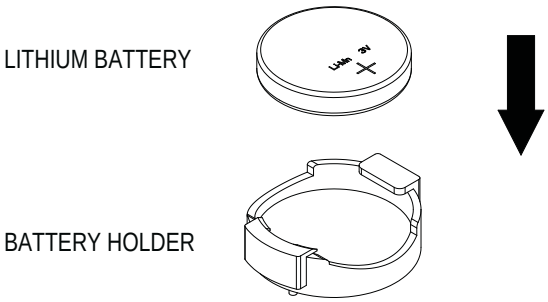
- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 1042G-TF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard CR2032 Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the H8QG6/i-F serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Serverboard Installation

This section explains the first step of physically mounting the H8QG6/i-F into the SC828TS+-R1400LPBP chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

Installing to the Chassis

1. Access the inside of the system by removing the screws from the back lip of the top cover of the chassis, then pull the cover off.

2. The H8QG6/i-F requires a chassis big enough to support a 16.48" x 13" (418 x 330 mm) serverboard, such as Supermicro's SC828TS+-R1400LPBP .

3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.

5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

6. Finish by replacing the top cover of the chassis.

5-3 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- SAS drive data cables (JSM1, JSM2)
- Control Panel cable (JF1)
- DVD-ROM drive cable (J3)
- USB cable (USB5/6)
- COM port cable (COM2)

Important! Make sure the cables do not come into contact with the fans.

Connecting Power Cables

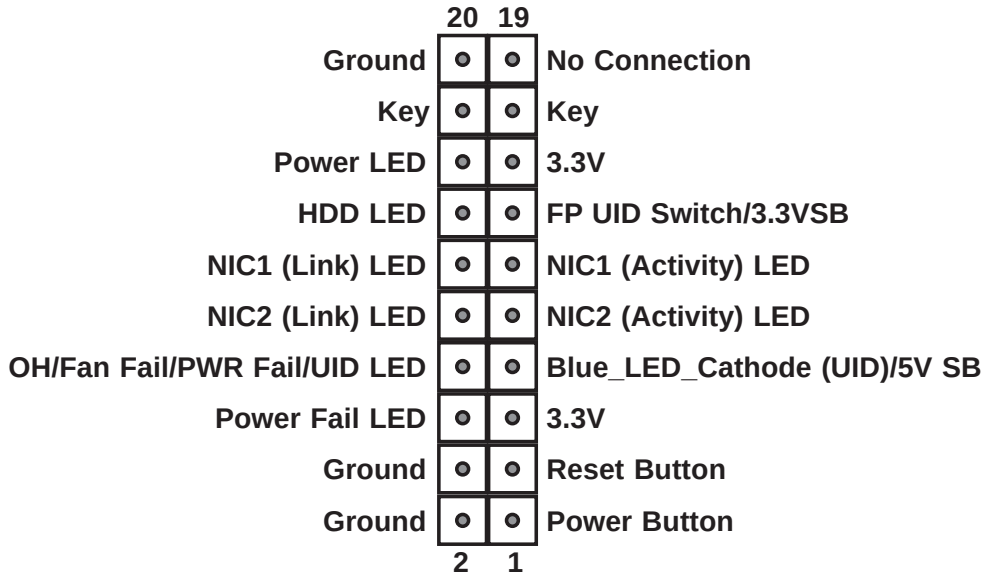
The H8QG6/i-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there is an 8-pin secondary power connector (JPW2) that also must be connected to your power supply (via a 4-pin connector). See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Section 5-9 for details and pin descriptions.

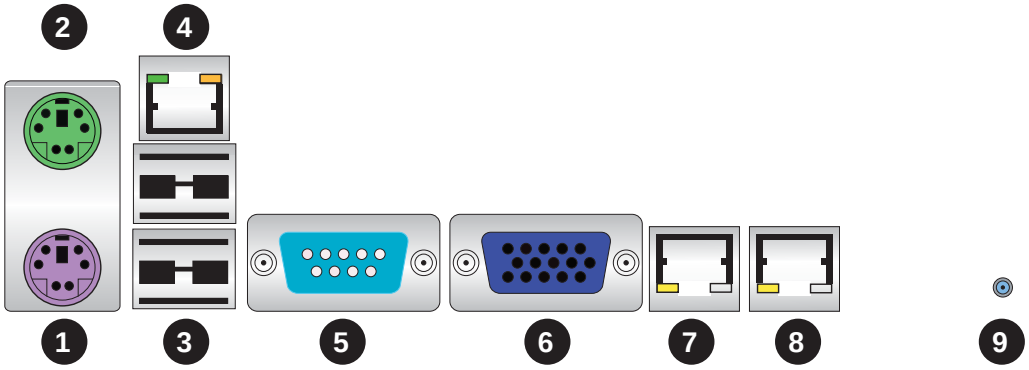
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



Rear I/O Ports	
1. Keyboard	6. VGA Port
2. PS/2 Mouse	7. LAN1
3. USB0/1	8. LAN2
4. IPMI LAN	9. UID
5. COM1	

5-5 Installing the Processor and Heatsink

Exercise extreme caution when handling and installing the processor. Always connect the power cord last and always remove it before adding, removing or changing any hardware components.

Installation Procedure

Follow the procedures as listed below to install the motherboard into a chassis.

1. Install the processor(s) and the heatsink(s).
2. Install the motherboard in the chassis.
3. Install the memory and add-on cards.
4. Finally, connect the cables and install the drivers.

Installing the Processors

1. Begin by removing the cover plate that protects the CPU. Lift the lever on the CPU socket until it points straight up.

2. With the lever raised, lift open the silver CPU retention plate.

3. Use your thumb and your index finger to hold the CPU. Locate and align pin 1 of the CPU socket with pin 1 of the CPU. Both are marked with a triangle.

4. Align pin 1 of the CPU with pin 1 of the socket. Once aligned, carefully place the CPU into the socket. *Do not drop the CPU on the socket, move the CPU horizontally or vertically or rub the CPU against the socket or against any pins of the socket, which may damage the CPU and/or the socket*.

5. With the CPU inserted into the socket, inspect the four corners of the CPU to make sure that it is properly installed and flush with the socket. Then, gently lower the silver CPU retention plate into place.

6. Carefully press the CPU socket lever down until it locks into its retention tab. For a dual-CPU system, repeat these steps to install another CPU into the CPU#2 socket (and into CPU#2, #3 and #4 sockets for a quad-CPU configuration).

Note: in single and dual-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPU(s). Memory is limited to a maximum of 32 for single CPU and 64 GB for dual CPU configurations.

Installing a Passive CPU Heatsink

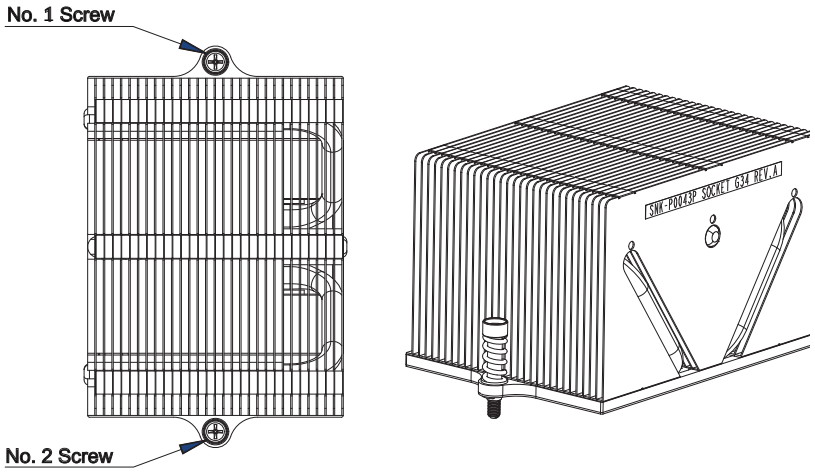
1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink directly on top of the CPU so that the heat sink screws are aligned with the mounting holes on the back plate.

3. Make sure the screwdriver torgue setting is no more than 5.0 Kgf-cm (4.3 lbf-in) and keep the heat sink direction vertical.

4. Tighten each screw a few turns at a time while alternating between the two until fully tightened.

Figure 5-3. SNK-0043P Heatsink



Removing the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unscrew the heatsink screws from the motherboard a few turns at a time, alternating between the two until the screws can be removed.

2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)

3. Once the CPU is loose, remove the it from the CPU socket.

4. Clean the surface of the CPU and the heatsink, removing the used thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the CPU and the heatsink.

5-6 Installing Memory

Exercise extreme caution when installing or removing memory modules to prevent any possible damage.

2-4 Installing Memory

Installing Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 2-1).

2. Install to slots CPU1/DIMM1A and CPU1/DIMM1B first, then to CPU1/ DIMM2A and CPU1/DIMM2B, etc. Always install in pairs and in the numerical order of the DIMM slots. See support information below.

3. Gently press down on the memory module until it snaps into place.

4. With two CPUs installed, repeat step 2 to populate the CPU2 DIMM slots. Always install pairs of DIMMs to both CPU DIMM slots for more efficient operation.

Note: 256 MB, 512 MB, 1 GB, 2 GB, 4 GB, 8 GB and 16 GB memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the H8QG6/i-F serverboard.

Support

The H8QG6/i-F serverboard supports single/dual/tri/quad-channel, DDR3-1333/1066/800 registered ECC/Unbuffered ECC/non-ECC SDRAM. Only interleaved memory is supported, so you must populate two DIMM slots at a time (see procedure above).

Populating two adjacent slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory.

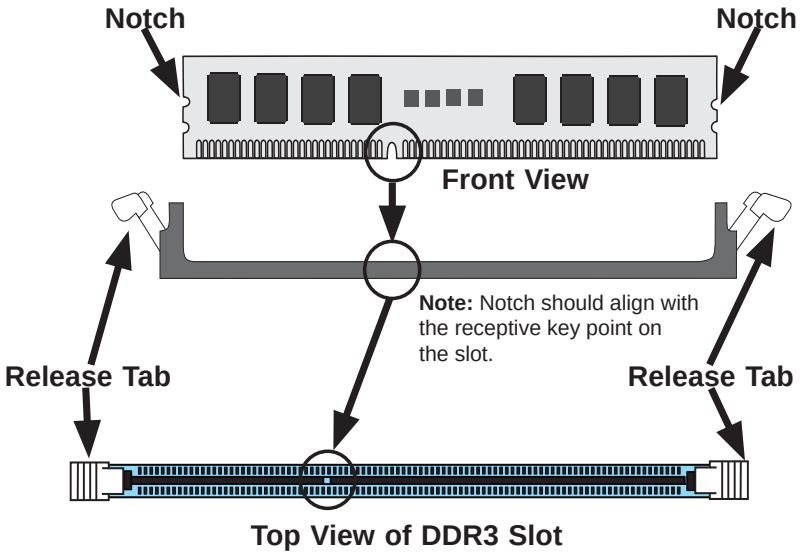
Maximum Memory

The H8QG6/i-F serverboard supports up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/non-ECC SDRAM.

Figure 5-4. Installing DIMM into Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove: Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Memory Population for Optimal Performance -For a Motherboard with One CPU (CPU1) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
4 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
8 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B

Memory Population for Optimal Performance -For a Motherboard with Two CPUs (CPU1 & CPU2) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
8 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
	CPU2	P2-1A		P2-2A		P2-3A		P2-4A	
16 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B
	CPU2	P2-1A	P2-1B	P2-2A	P2-2B	P2-3A	P2-3B	P2-4A	P2-4B

Memory Population for Optimal Performance – For a Motherboard with Four CPUs (CPU1, CPU2, CPU3 & CPU4) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
16 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
	CPU2	P2-1A		P2-2A		P2-3A		P2-4A	
	CPU3	P3-1A		P3-2A		P3-3A		P3-4A	
	CPU4	P4-1A		P4-2A		P4-3A		P4-4A	
32 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B
	CPU2	P2-1A	P2-1B	P2-2A	P2-2B	P2-3A	P2-3B	P2-4A	P2-4B
	CPU3	P3-1A	P3-1B	P3-2A	P3-2B	P3-3A	P3-3B	P3-4A	P3-4B
	CPU4	P4-1A	P4-1B	P4-2A	P4-2B	P4-3A	P4-3B	P4-4A	P4-4B

DIMM Module Population Configuration

For memory to work properly, follow the tables below for memory installation:

Per Channel DIMM Populations Options					
DIMM Type	**DIMM A**	**DIMM B**	**Max. MHz, 1.5V DIMMs**	**Max. MHz, 1.35V DIMMs**	**Max. GB/ Channel**
Unbuffered DIMM	SR or DR	Empty	1333 MHz	1333 MHz	8 GB
	SR	SR			
	DR	DR			
Registered DIMM	SR or DR	Empty	1333 MHz	1333 MHz	16 GB
	SR	SR			
	DR	DR			
	QR	Empty	1333 MHz	1066 MHz	16 GB
	QR	QR	1066 MHz	800 MHz	32 GB

Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Note 2: Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

Possible System Memory Allocation & Availability		
System Device	**Size**	**Physical Memory Available (4 GB Total System Memory)**
Firmware Hub flash memory (System BIOS)	1 MB	3.99 GB
Local APIC	4 KB	3.99 GB
Area Reserved for the chipset	2 MB	3.99 GB
I/O APIC (4 Kbytes)	4 KB	3.99 GB
PCI Enumeration Area 1	256 MB	3.76 GB
PCI Express (256 MB)	256 MB	3.51 GB
PCI Enumeration Area 2 (if needed) -Aligned on 256-M boundary-	512 MB	3.01 GB
VGA Memory	16 MB	2.85 GB
TSEG	1 MB	2.84 GB
Memory available for the OS & other applications		2.84 GB

5-7 Adding PCI Add-On Cards

The 2042G-TRF/6RF can accommodate low-profile (only) add-on cards installed into all the PCI slots included on the H8QG6/i-F.

Installing an Add-on Card

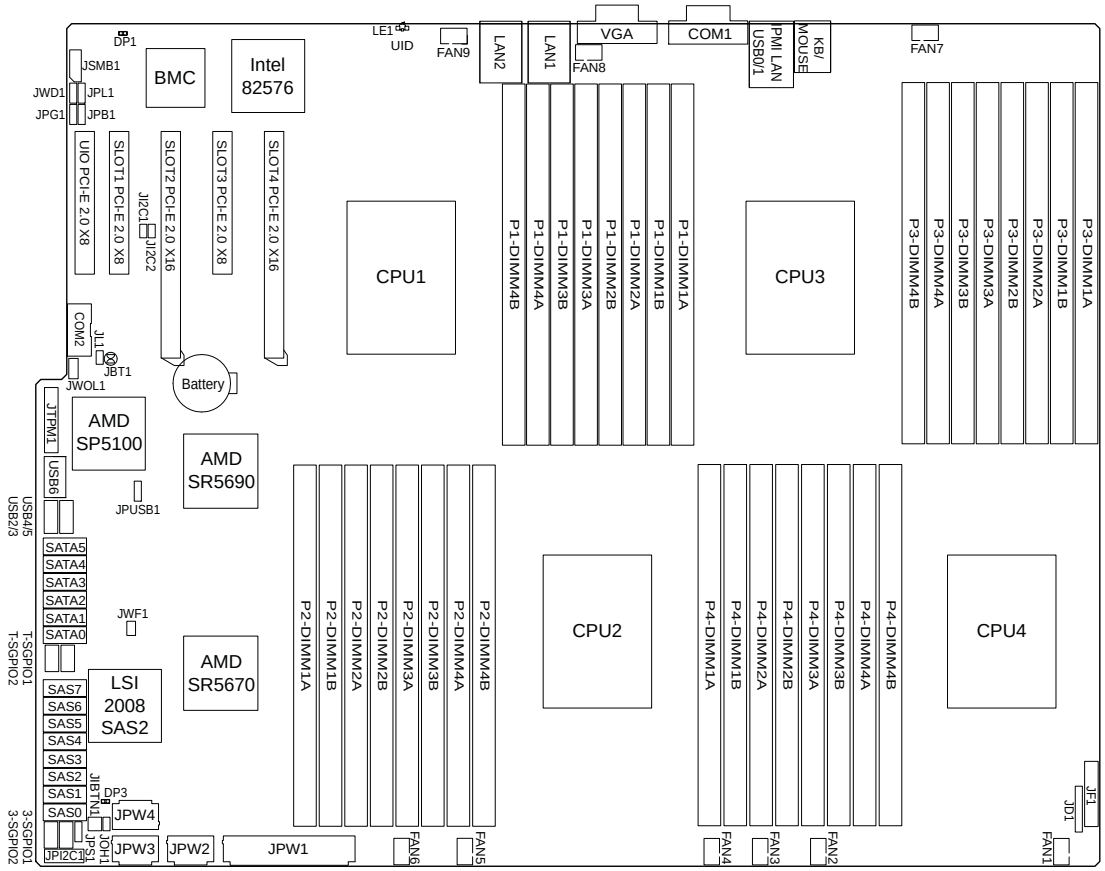
1. Begin by removing the PCI slot shield for the slot you wish to populate.

2. Fully seat the card into the riser card slot, pushing down with your thumbs evenly on both sides of the card.

3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shields protect the serverboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

5-8 Serverboard Details

Figure 5-5. H8QG6-F Layout
(not drawn to scale)



Notes:

Jumpers not indicated are for test purposes only.

Not all ports, jumpers or LED Indicators are available on all serverboards.

H8QG6/i-F Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 2-7)
JI²C1/JI²C2	I²C to PCI-E Slot Enable/Disable	Both Closed (Enabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN 1/2 Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Controller Enable/Disable (only on H8QG6-F)	Pins 1-2 (Enabled)
JPUSB1	USB Wakeup	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description
LAN Ports	LEDs for the LAN Ethernet ports
Dedicated IPMI LAN	LEDs for the dedicated IPMI LAN Ethernet port
LE1	LED for UID Button
DP1	LED for IPMI Heartbeat
DP3	LED for Serverboard Power-On

Connector	Description
COM1/COM2	COM1 Serial Port/Header
FAN 1-9	Chassis/CPU Fan Headers
IPMI LAN	Dedicated IPMI LAN Port
JD1	Speaker Header
JF1	Front Panel Connector
JIBTN1	RAIDKey for RAID 5 SAS support (only on H8QG6-F)
JL1	Chassis Intrusion Header
JOH1	Overheat Warning Header
JPI2C1	Power I^2C Header
JPW1	24-pin Main ATX Power Connector
JPW2/3/4	+12V 8-pin CPU Power Connectors
JSMB1	System Management Bus Header (SMBus)
JTPM1	Trusted Platform Module Header
JWF1	Compact Flash Card Power Connector
JWOL1	Wake-On-LAN Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
PS2 Mouse/Keyboard	PS2 Mouse/Keyboard connectors
SAS0~3, SAS4~7	SAS Ports (only on H8QG6-F)
SATA0 ~ SATA5	SATA Ports
3-SGPIO1/3-SGPIO2	Serial General Purpose I/O Header for SAS (only on H8QG6-F)
T-SGPIO-1/TSGPIO-2	Serial General Purpose Input/Output Header for SATA
UID	Unit Identifier Button
USB0/1, USB6, USB2/3, USB4/5	Universal Serial Bus (USB) Ports, Type-A Ports and Headers
VGA	VGA Connector

5-9 Connector Definitions

Power Connectors

A 24-pin main power supply connector(JPW1) and three 8-pin CPU PWR connectors (JPW2/JPW3/JPW4) on the motherboard. These power connectors meet the SSI EPS 12V specification. In addition to the 24-pin ATX power connector, the 12V 8-pin CPU PWR connectors at JPW2/JPW3/JPW4 must also be connected to your power supply. See the table on the right for pin definitions.

Warning: To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin and three 8-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the three 8-pin (JPW2,JPW3 and JPW4) power connectors on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard.

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-pin PWR Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection

PW_ON Connector

The PW_ON connector is on pins 15 and 16 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
15	PW_ON
16	Ground

HDD/FP UID Switch

The HDD/UID Switch connections are located on pins 13/14 of JF1. Attach a hard-drive LED cable to display HDD or SATA activities. This connection can also be used as a front panel UID (Unit Identifi er) switch. The UID LED on Pin 7 of JF1 works in conjunction with this UID Switch. When the user presses and releases the UID switch, the UID LED will be turned on or off to indicate the location of the unit. (Refer to Page 2-11 for more details.)

HDD/UID Switch Pin Defi nitions (JF1)

Pin#	Definition
13	UID Signal/3.3V
14	HDD Active

Overheat (OH)/Fan Fail/PWR Fail/UID LED

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat/Fan Fail/Power Fail and UID LED connections. The Red LED on pin 8 provides warnings of an overheat, fan failure or power failure. The Blue LED on pin 7 works as the UID LED indicator for the front panel UID switch located on pins 13~14 of JF1. When Jumper J_UID_OW is set to off (default), the Red LED takes precedence over the Blue LED. (See Page 2-19 for details.) Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LEDPin Defi nitions (JF1)

Pin#	Definition
7	Blue_LED-Cathode(UID)/5.5V.SB
8	OH/Fan Fail/PWR Fail/UID LED (Red)

OH/Fan Fail/PWR Fail LED Status (Red LED)

State	Indication
Off	Normal
On	Overheat
Flashing	Fan Fail

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Defi nitions (JF1)

Pin#	Definition
5	3.3V
6	PWR Fail LED

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be confi gured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin defi nitions.

Power Button Pin Defi nitions (JF1)

Pin#	Definition
1	PWR
2	Ground

Universal Serial Bus Ports

Two Universal Serial Bus ports (USB 2.0) are located beside the Keyboard and Mouse PS2 ports. One additional Type A port (USB6) is also included on the motherboard. See the table on the right for pin definitions.

Universal Serial Bus Ports Pin Definitions (USB0/1, USB6)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground

USB Headers

Four USB 2.0 headers (USB2/3 and USB4/5) are also included on the motherboard. These may be connected to provide front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Universal Serial Bus Headers Pin Definitions (USB2/3, USB4/5)

USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	NC

Note: NC indicates no connection.

Fan Headers

This motherboard has nine fan headers (Fan1 to Fan9). These 4-pin fans headers are backward compatible with 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by the BIOS. See the table on the right for pin definitions

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Serial Ports

The COM1 serial port is located beside the VGA port. Refer to the motherboard layout for the location of the COM2 header. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: NC indicates no connection.

Video Connector

A Video (VGA) connector is located below the COM Port on the IO backplane. This connector is used to provide video and CRT display.

SGPIO

The T-SGPIO1/ T-SGPIO2 (Serial General Purpose Input/Output) headers provide a bus between the SATA controller and the backpane to provide SATA enclosure management functions. Connect the appropriate cable from the backplane to the T-SGPIO1 header to utilize SATA management functions on your system.

Likewise, the 3-SGPIO1/3-SGPIO2 headers provide the same function between the SAS controller and the backpane, and have the same pin definitions (only on H8QG6-F).

SGPIO Header Pin Definitions (T-SGPIO1/TSGPIO2) (3SGPIO1/3SGPIO2))

Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	NC	8	NC

Note: NC indicates no connection.

SMBus Header

The header at SMBus is for the System Management Bus. Connect the appropriate cable here to utilize SMB on the system. See the table on the right for pin definitions.

SMBus Header (SMBus) Pin Definitions (JSMB1)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must have a LAN card with a Wake-On-LAN connector and cable to use the Wake-On-LAN feature.

Wake-On-LAN Pin Definitions (JWOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Power I2C

The JPI2C1 header is for power I^2C, which may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

Power I^2C Pin Definitions (JPI2C)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	NC

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Battery voltage
2	Intrusion signal

Overheat LED

Connect an LED to the JOH1 header to provide warning of chassis overheating. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)

Pin#	Definition
1	3.3V
2	OH Active

Power LED/Speaker

On the JD1 header, pins 1~3 are used for power LED indication, and pins 4-7 are for the speaker. See the tables on the right for pin definitions. If you wish to use the onboard speaker, you should close pins 6~7 with a jumper. Connect a cable to pins 4~7 of JD1 to use an external speaker.

PWR LED Connector Pin Definitions

Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 4~7	External Speaker
Pins 6~7	Internal Speaker

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located next to the Back Panel USB Ports 0~3 on the motherboard. See the table at right for pin definitions.

PS/2 Keyboard/Mouse Pin Definitions

PS2 Keyboard		PS2 Mouse	
Pin#	Definition	Pin#	Definition
1	KB Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	Mouse/KB VCC (+5V)	4	Mouse/KB VCC (+5V)
5	KB Clock	5	Mouse Clock
6	No Connection	6	No Connection

VCC: with 1.5A PTC (current limit)

Unit Identifier Button

There is a Unit Identifier (UID) button on the rear I/O of the board. There is also another UID button located on the control panel. When you push either UID button, both Rear UID and Front Panel UID Indicators will illuminate. Push either button again to turn off both indicators. These UID indicators provide easy identification of a system unit that may be in need of service.

UID Button Pin Definitions

Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

Trusted Platform Module Header

This header is used to connect a Trusted Platform Module (TPM), available separately from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives, disallowing access if the TPM associated with it is not installed in the system. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions (JTPM1)

Pin#	Definition	Pin#	Definition
1	LCLK		GND
3	LFRAME		No Pin
5	LRESET		VCC5
7	LAD3		LAD2
9	VCC3		LAD1
11	LAD0		GND
13	RSV0		RSV1
15	SB3V		SERIRQ
17	GND		CLKRUN
19	LPCPD		RSV2

LAN1/2 (Ethernet Ports)

Two Gigabit Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port. Additionally, there is a dedicated LAN port for IPMI on top of the two rear USB ports. These Ethernet ports accept RJ45 type cables.

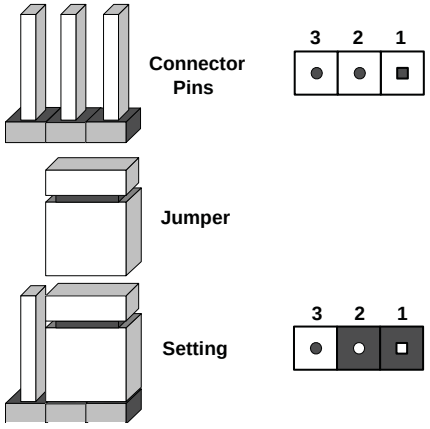
JIBTN1 Header (only on H8QG6-F)

A RAIDKey header, located at JIBTN1, provides RAID function support in order to use RAID 5 SAS support.

Compact Flash Card PWR Connector

A Compact Flash Card Power Connector is located at JWF1.

5-10 Jumper Settings



Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

JBT1 contact pads

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

I2C to PCI-Express Slot

JI²C1/JI²C2 allows you to enable the I²C bus to communicate with the PCI-Express slot. For the jumpers to work properly, please set both jumpers to the same setting. If enabled, both jumpers must be enabled. If disabled, both jumpers must be disabled. See the table on the right for jumper settings.

I²C to PCI-Express Slot Jumper Settings (JI²C1/JI²C2)

Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Watch Dog Enable/Disable

JWD1 enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD1)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: when Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/2 Enable/Disable

Change the setting of jumper JPL1 to enable to enable or disable the LAN1 and LAN2 Ethernets ports. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 En/Disable Jumper Settings (JPL1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SAS Enable/Disable

JPS1 allows you to enable or disable the SAS controller. The default position is on pins 1 and 2 to enable SAS. See the table on the right for jumper settings.

SAS Enable/Disable Jumper Settings (JPS1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

USB Wake-Up

JPUSB1 jumper allows you to "wake up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. These jumpers are used in conjunction with the USB Wake-Up function in the BIOS. See the table on the right for jumper settings and jumper connections. (the default is Enabled)

Backpanel USB Wake-Up Enable (JPUSB1) Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

BMC Jumper

JPB1 is used to enable or disable theBMC (Baseboard Management Control) Chip and the onboard IPMI connection.This jumper is used together with the IPMI settings in the BIOS. The default position is on pins 1 and 2 to Enable BMC. See the table on the right for jumper settings.

BMC Jumper Enable (JPB1) Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

5-11 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, one LED blinks to indicate activity while the other may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the H8QG6/i-F serverboard. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)		
Color	Status	Definition
Link (Left)	Green: Solid	100 Mb/s
Activity (Right)	Amber: Blinking	Active

Power LED

DP3 is an Onboard Power LED. When this LED is lit, it means power is present on the serverboard. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

Power LED (DP3)	
State	System Status
On	Standby power present on motherboard
Off	No power connected

IPMI LED

The serverboard contains an IPMI LED (DP1) located near the corner above the PCI-X slots. When this LED is lit, it means a connection is active for the built-in IPMI on the serverboard.

IPMI LED (DP1)	
State	System Status
On	Active connection
Off	No connection

Note: This LED is not installed on non-IPMI boards.

UID LED (LE1)

A rear UID LED Indicator, located at LE1, works in conjunction with the rear UID switch to provide easy identification for a unit that might be in need of service. Refer to Page 5-19 for further UID details.

5-12 SAS and SATA Drive Connections

SATA Ports

There are no jumpers to configure the SATA ports, which are designated SATA0 through SATA5. See the table on the right for pin definitions.

SATA Ports Pin Definitions (SATA0-SATA5)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

SAS Ports (H8QG6-F Only)

There are eight SAS ports included on the motherboard. See the table on the right for pin definitions.

Note: JPS1 must be set correctly to enable the SAS controller.

SAS Ports Pin Definitions (SAS0 ~ SAS7)

Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

5-13 Enabling SATA RAID

Now that the hardware is set up, you must install the operating system and the SATA RAID drivers, if you wish to use RAID with your SATA drives. The installation procedure differs depending on whether you wish to have the operating system installed on a RAID array or on a separate non-RAID drive. See the instructions below for details.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that employs a single cable with a minimum of four wires to create a point-to-point connection between devices. This connection is a serial link that supports a SATA transfer rate from 150 MBps. The serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA) and can extend up to one meter in length, compared to only 40 cm for PATA cables. Overall, SATA provides better functionality than PATA.

Installing the OS/SATA Driver

Before installing the OS (operating system) and SATA RAID driver, you must decide if you wish to have the operating system installed as part of a bootable RAID array or installed to a separate non-RAID hard drive. If on a separate drive, you may install the driver either during or after the OS installation. If you wish to have the OS on a SATA RAID array, you must follow the procedure below and install the driver during the OS installation.

Building a Driver Diskette

You must first build a driver diskette from the Supermicro CD-ROM that was included with the system. (You will have to create this disk on a computer that is already running and with the OS installed.)

Building a Driver Diskette

1. Insert the CD into your CD-ROM drive and start the system. A display as shown in Figure 5-8 will appear.

2. Click on the icon labeled "Build Driver Diskettes and Manuals" and follow the instructions to create a floppy disk with the driver on it.

3. Once it's been created, remove the floppy and insert the installation CD for the Windows Operating System you wish to install into the CD-ROM drive of the new system you are about to configure.

Note: You need to have an external USB floppy when building the driver diskette. Window's Vista, Windows 2008 or later Windows OS systems can use a USB stick instead of a floppy.

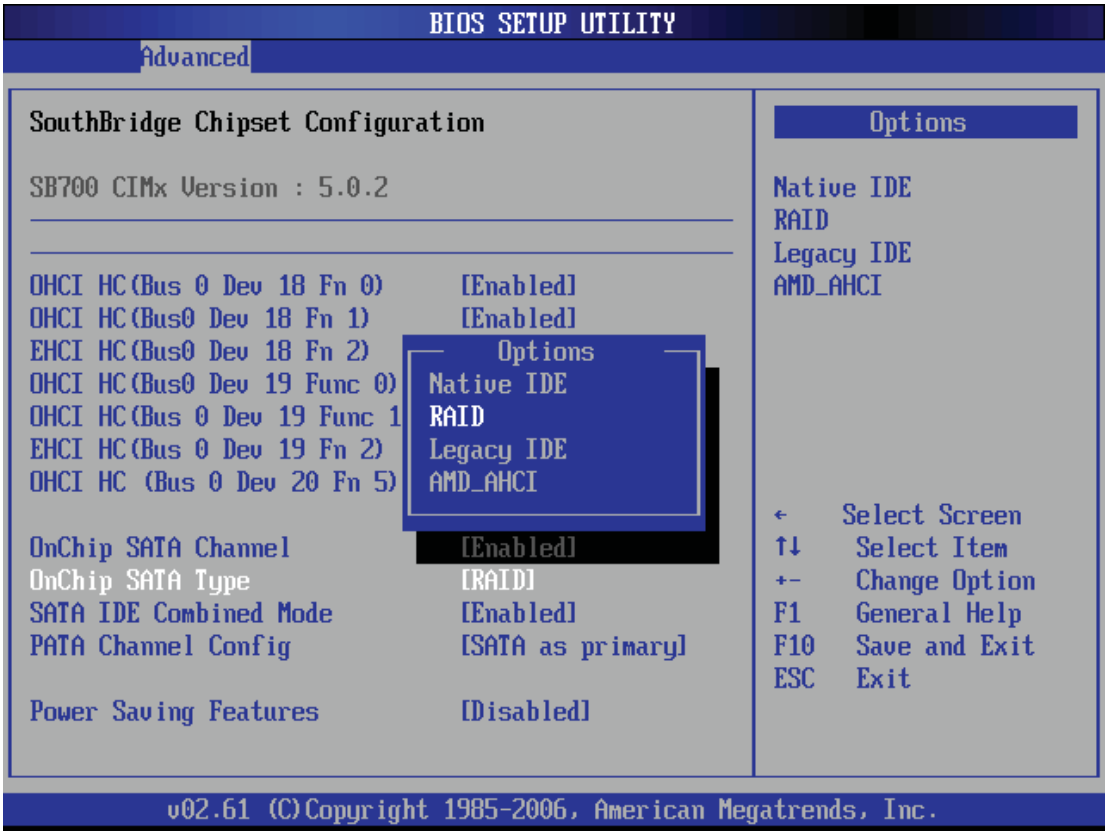
Enabling SATA RAID in the BIOS

Before installing the Windows Operating System, you must change some settings in BIOS. Boot up the system and hit the <Del> key to enter the BIOS Setup Utlility. After the Setup Utility loads,

1. Use the arrow keys to move to the Exit menu. Scroll down with the arrow keys to the "Load Optimal Defaults setting and press <Enter>. Select "OK" to confirm, then <Enter> to load the default settings.

2. Use the arrow keys to move to the "Advanced" menu, then scroll down to "Chipset Configuration". Next enter "SourthBridge Configuration" and press the <Enter> key. Once in this submenu, scroll down to "OnChip SATA Type" and choose the "RAID" option (see Figure 5-6).

Figure 5-6. BIOS Setup Screen



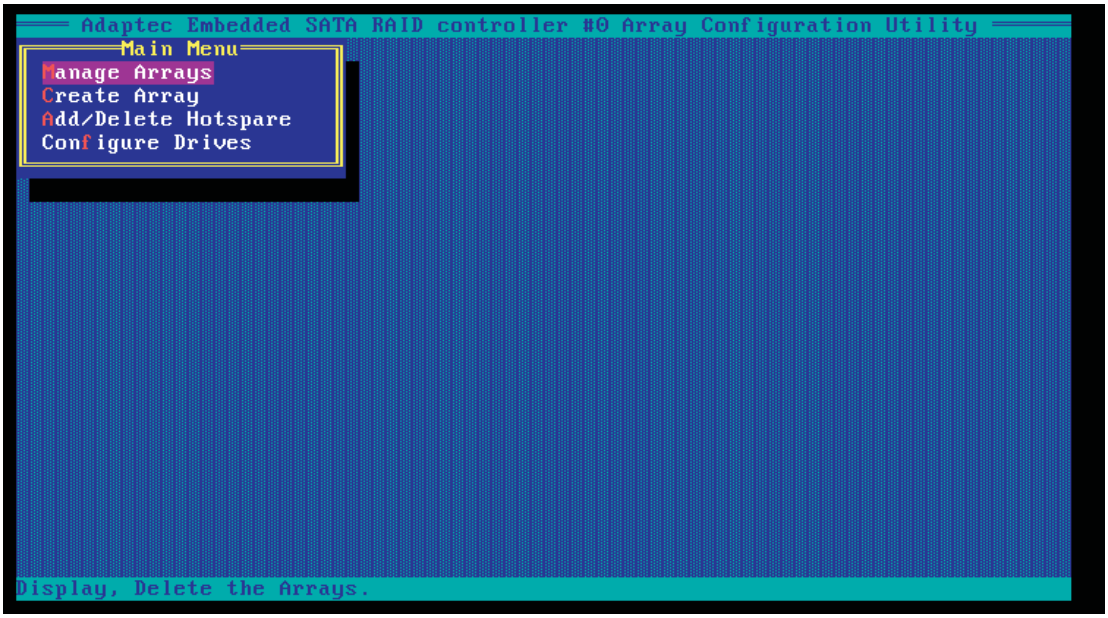
3. Hit the <Esc> key twice and scroll to the Exit menu. Select "Save Changes and Exit" and hit <enter>, then hit <Enter> again to verify.

4. After exiting the BIOS Setup Utility, the system will reboot. When prompted during the startup, press the <CTRL+A> key when prompted to run the Dot-Hill RAID Utility program (see Figure 5-7).

Using the Adaptec RAID Utility

The Adaptec® RAID Utility program is where you can define the drives you want to include in the RAID array and the mode and type of RAID.

Figure 5-7.Adaptec RAID Utility Program Screen



Installing the RAID Driver During OS Installation

You may also use the procedure below to install the RAID driver during the Window's OS installation:

5. With the Windows OS installation CD in the CD-ROM drive, restart the system.

6. When you see the prompt, hit the <F6> key to enter Windows setup.

7. Eventually a blue screen will appear with a message that begins "Windows could not determine the type of one or more storage devices . . ." When you see the screen, hit the <S> key to "Specify Additional Device", then insert the driver diskette you just created into the floppy drive.

8. Highlight "Manufuacturer Supplied Hardware Support Disk" and hit the <Enter> key.

9. Highlight the first "Adaptec RAID" driver shown and press the <Enter> key to install it.

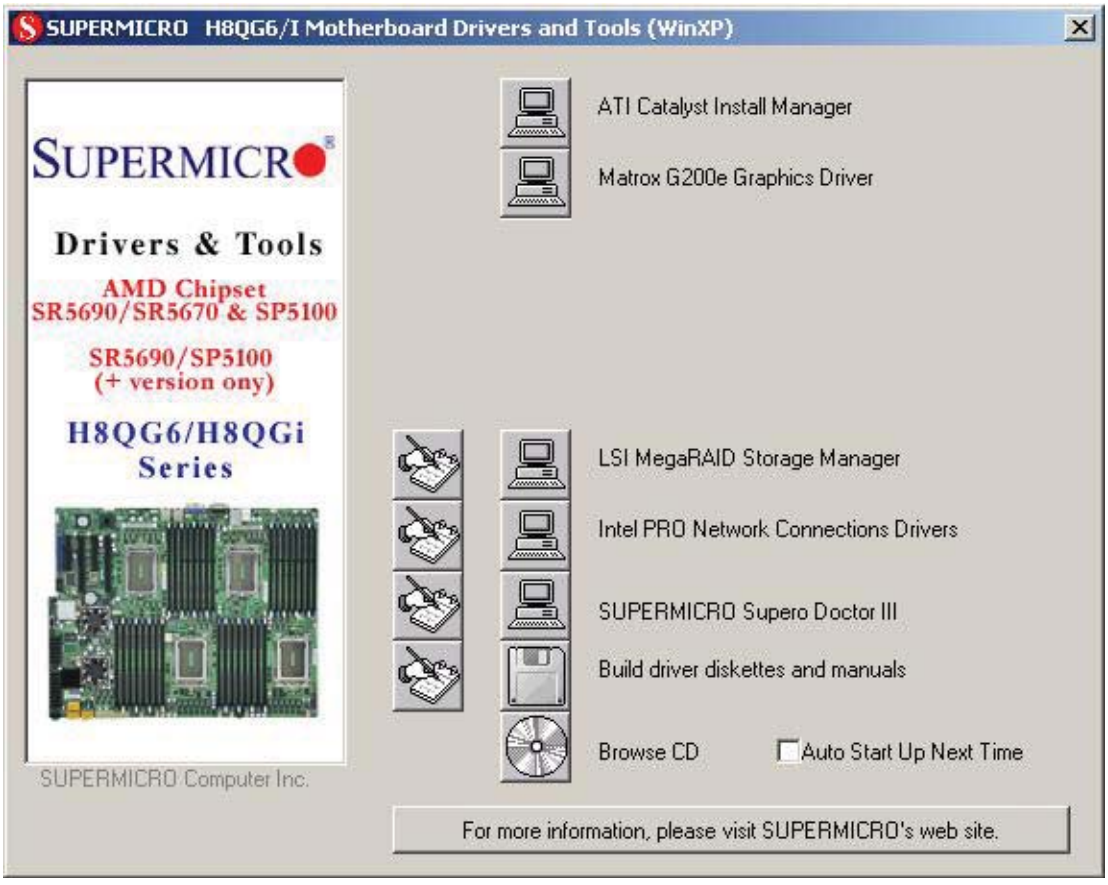
10. Press <Enter> again to continue with the Windows setup.

5-14 Installing Drivers

The CD that came bundled with the system contains drivers, some of which must be installed, such as the chipset driver. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-8 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you should reboot the system before moving on to the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Figure 5-8. Driver/Tool Installation Display Screen



Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-9. Supero Doctor III Interface Display Screen (Health Information)

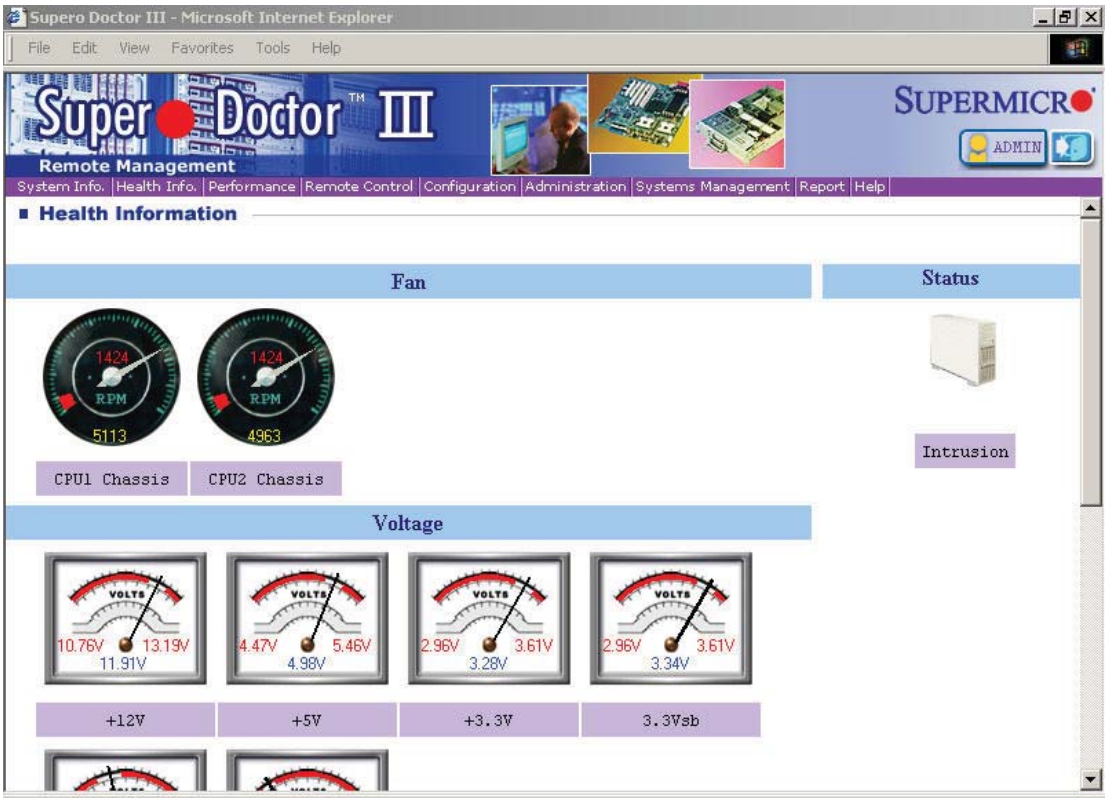


Figure 5-10. Supero Doctor III Interface Display Screen (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. | Health Info. | Performance | Remote Control | Configuration | Administration | Systems Management | Report | Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: Super Doctor III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the Super Doctor III User's Guide at: <http://www.supermicro.com/manuals/other/SDIII_User_Guide.pdf>. For Linux, we recommend that you use the Supero Doctor II applictation instead.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC828TS+-R1400LPBP chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

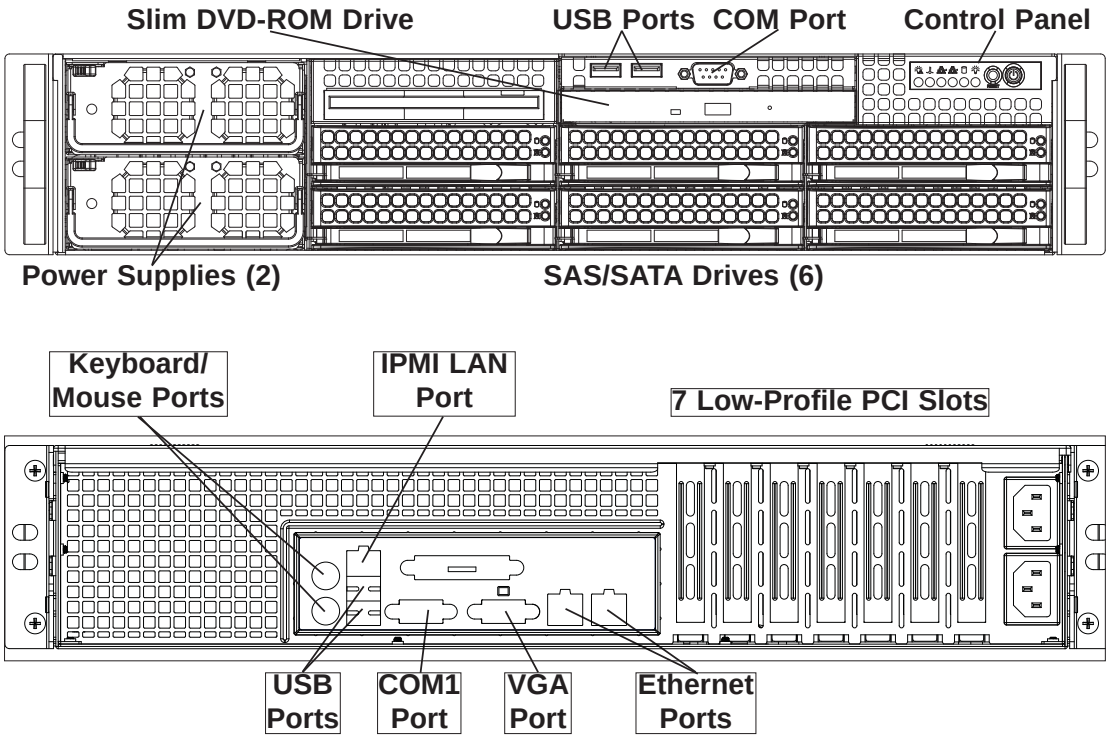
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views



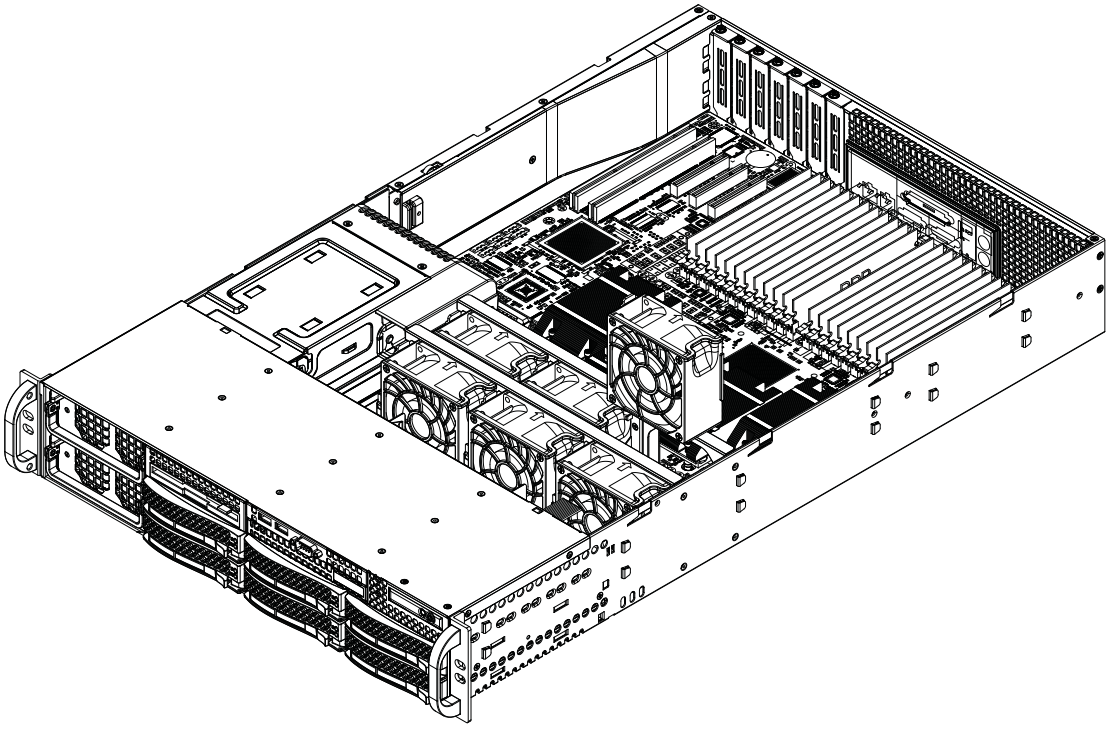
6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Six 8-cm heavy-duty hot-swap fans provide the cooling for the SuperServer 2042G-TRF/6RF. The fans are configured as a set of three with two fans placed back to back to maximize airflow. It is very important that the chassis top cover is properly installed in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2 for details.

Figure 6-2. Removing System Cooling Fans



System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover while the system is still running to determine which of the fans has failed.

Replacing System Fans

Removing a fan

1. Remove the chassis cover (see page 6-7 for procedure).

2. Press the tabs on the sides of the fan to unlock and remove the fan and its housing.

3. The fan's power connections will automatically detach. System power does not need to be shut down since the fans are hot-pluggable.

Installing a new fan

1. Replace the failed fan with an identical 8-cm, 12 volt fan (available from Supermicro, p/n FAN-0099L).

2. Position the new fan into the space vacated by the failed fan previously removed. A "click" can be heard when the fan is fully installed in place and the power connections are made.

3. If the system power is on, the hot-plug feature will cause the fan to start immediately upon being connected to its header on the serverboard.

4. Replace the chassis cover.

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SAS/SATA Drives: You do not need to access the inside of the chassis or remove power to replace or swap SAS/SATA drives. Proceed to the next step for instructions. **Note:** You must use standard 1" high, SAS/SATA drives in the SuperServer 2042G-TRF/6RF.

DVD-ROM: For installing/removing the DVD-ROM drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "DVD-ROM Installation" section later in this chapter for instructions.

SAS/SATA Drive Installation

The SAS/SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drives. For this reason, even empty carriers without SAS/SATA drives installed must remain in the chassis.

Mounting a SAS/SATA drive in a drive carrier

1. Install a drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with six screws, as shown in Figure 6-3.

The SAS/SATA drive carriers are located in the front of the chassis, making them easily accessible for installation and removal. These drives are hot-swappable, meaning that they can be installed and removed while the system is running.

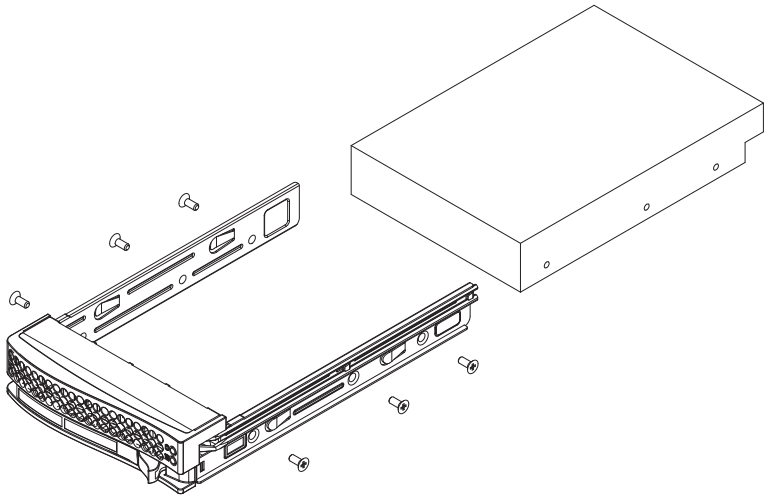
Installing/removing SAS/SATA drives

1. To remove a SAS/SATA drive, first push the release button located beside the drive's LEDs

2. Swing the handle fully out and use it to pull the SAS/SATA drive carrier straight out (see Figure 6-4).

Note: Your operating system must have RAID support to enable the hot-plug capability of the SAS/SATA drives.

Figure 6-3. Mounting a SAS/SATA Drive in a Carrier

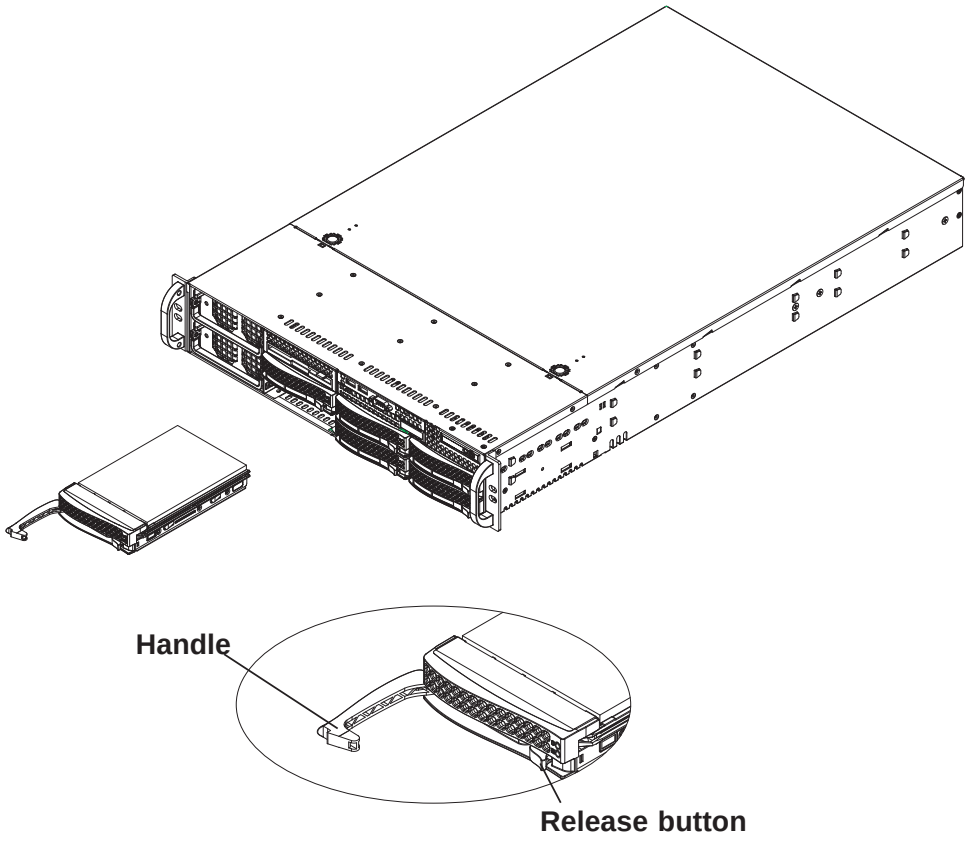


Use caution when working around the SAS/SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

Important: Regardless of how many SAS/SATA hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm.

Figure 6-4. Removing a SAS/SATA Drive Carrier



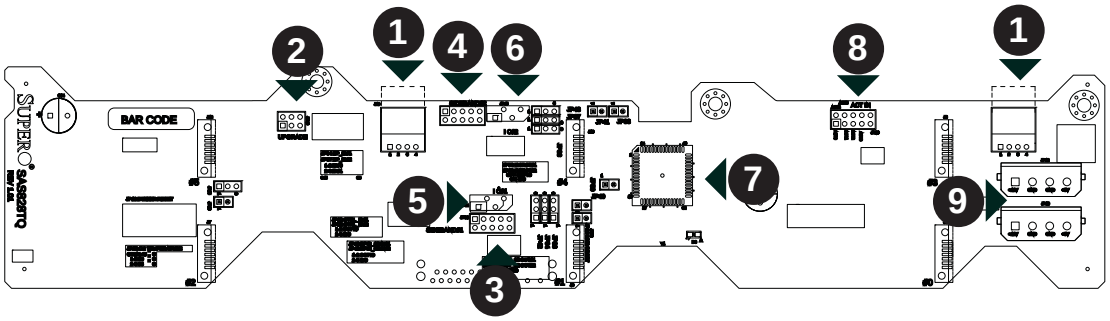
<u>Important:</u> All of the SAS/SATA drive carriers must remain in the drive bays to maintain proper cooling airflow.

SAS/SATA Drive Backplane

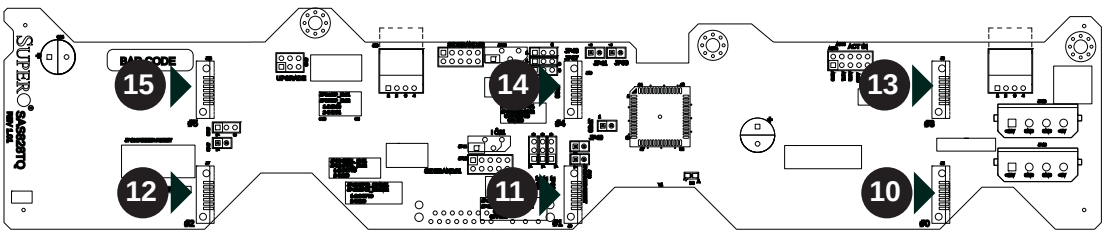
The SAS/SATA drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SAS/SATA drives. The backplane is already preconfigured, so there are no jumpers or switches present on it.DVD-ROM Drive Installation

The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The 2042G-TRF/6RF accomodates only slim type DVD-ROM drives. Side mounting brackets are typically needed to mount a slim DVD-ROM drive in the 2042G-TRF/6RF server. You must power down the system before installing or removing IDE components. See the Figures below for connector and component locations.

Figure 6-5. Backplane Connections



SAS/SATA Backplane Connections	
1. CD-ROM/Floppy Drive Power	9. 4-pin Power Connectors
2. Upgrade Connector	10. SAS/SATA Port #0
3. Sideband Connector #1	11. SAS/SATA Port #1
4. Sideband Connector #2	12. SAS/SATA Port #2
5. I2C Connector #1	13. SAS/SATA Port #3
6. I2C Connector #2	14. SAS/SATA Port #4
7. MG9072 Chip	15. SAS/SATA Port #5
8. ACT_IN	



6-5 Power Supply

The SuperServer 2042G-TRF/6RF has a 1400 watt redundant power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Removing/Replacing the Power Supply

You do not need to shut down the system to replace a power supply unit. The backup power supply module will keep the system up and running while you replace the failed hot-swap unit. Replace with the same model (see part number in Appendix D), which can be ordered directly from Supermicro.

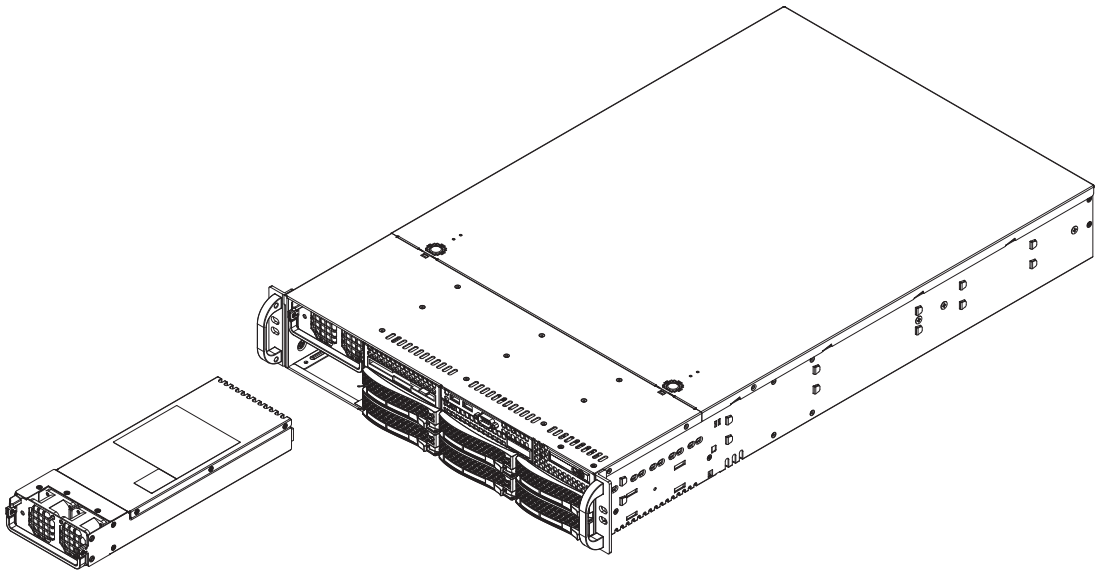
Removing the power supply

1. First unplug the power cord from the failed power supply module. The top/bottom power socket corresponds to the top/bottom power module.
2. Depress the locking tab on the power supply module.
3. Use the handle to pull the module straight out.

Installing a new power supply

1. Replace the failed hot-swap unit with another identical power supply unit.
2. Push the new power supply unit into the power bay until you hear a click.
3. Finish by plugging the AC power cord back into the socket.

Figure 6-6. Removing a Power Supply Module



Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the H8QG6/i-F serverboard. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our web site for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

7-2 Main Menu

When you first enter AMI BIOS Setup Utility, you will see the Main Menu screen. You can always return to the Main Menu by selecting the ***Main*** tab on the top of the screen with the arrow keys.

The Main Menu screen provides you with a system overview, which includes the version, built date and ID of the AMIBIOS, the type, speed and number of the processors in the system and the amount of memory installed in the system.

System Time/System Date

You can edit this field to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in DAY/MM/DD/YYYY format. The time is entered in HH:MM:SS format. Please note that time is in a 24-hour format. For example, 5:30 A.M. appears as 05:30:00 and 5:30 P.M. as 17:30:00.

7-3 Advanced Settings Menu

▶ CPU Configuration

CPU Configuration

This displays static information on the Module Version, AGESA Version, Physical Count and Logical Count for the system's processor(s) and clock.

CPU Information

This setting is used to select which physical CPU's information to display. Options include **Processor 0** or Processor 1. The information for the selected processor includes Processor number, Revision, Cache L1/L2/L3, Speed, NB CLK, Able to Change Frequency and uCode Patch Level.

Note: Zero is always the "Boot Strap Processor" or main CPU with all others being "Application Processors".

GART Error Reporting

This option should remain disabled for normal operation. The driver developer may enable this option for testing purposes. Options are Enabled or **Disabled**.

Microcode Update

This setting **Enables** or Disables microcode updating.

Secure Virtual Machine Mode

This setting is used to **Enable** or Disable SVM.

Power Now

This setting is used to **Enable** or Disable the AMD Power Now feature.

ACPI SRAT Table

This option **Enables** or Disables the building of the ACPI SRAT Table.

Clock Spread Spectrum

This option should remain **Disabled** for normal operation. The driver developer may enable it for testing purposes.

▶ IDE Configuration

Onboard PCI IDE Controller

This setting allows you to set the options for the PCI IDE controller. Options include Disabled, Primary, Secondary or **Both**.

▶ Primary/Secondary/Third IDE Master/Slave

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allows the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode.

Use this value if the IDE disk drive support cannot be determined. Select 0 to allow BIOS to use PIO mode 0, which has a data transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

DMA Mode

Selects the DMA Mode. Options are **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0. MDWDMA1, MWDMA2, UDMA0. UDMA1, UDMA2, UDMA3, UDMA4 and UDMA5. (SWDMA=Single Word DMA, MWDMA=Multi Word DMA, UDMA=UltraDMA.)

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow BIOS to auto detect hard disk drive support. Select "Disabled" to prevent AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32-Bit Data Transfer

Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are **Enabled** and Disabled.

Hard Disk Write Protect

Use this setting to Enable or **Disable** hard disk write protection for your system. This is effective only if the device is accessed through the BIOS.

IDE Detect Timeout (Sec)

Use the +/- keys to adjust and select the time out for detecting ATA/ATAPI devices. The default value is **35**.

ATA(PI) 80Pin Cable Detection

This option selects the mechanism used for detecting the installation of an 80-pin ATA(PI) cable. Options include **Host & Device**, Host or Device.

▶ SuperI/O Configuration

Serial 1 Address

This option specifies the base I/O port address and Interrupt Request address of serial port 1. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to *Disabled*, the serial port physically becomes unavailable. Select "3F8/IRQ4" to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. Options include Disabled, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3

Serial 2 Address

This option specifies the base I/O port address and Interrupt Request address of serial port 2. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "2F8/IRQ3" to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. Options include Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2F8/IRQ3.

Serial Port Mode

This sets the serial port mode for your system. Options include **Normal**, IrDA and ASK IR.

Restore on AC Power Loss

This sets the action that occurs when an AC power loss occurs. Options include Power Off, Power On and **Last State**.

Watch Dog Timer

This sets the Watch Dog Timer. Options include Enabled or **Disabled**.

▶ ACPI Configuration

▶ Advanced ACPI Configuration

ACPI Version Features

Use this setting the determine which ACPI version to use. Options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0.

ACPI APIC Support

Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are **Enabled** and Disabled.

AMI OEMB Table

This setting specifies whether to include the OEMB table pointer to the R(X) SOT pointer lists. Options include **Enabled** or Disabled.

Headless Mode

Use this setting to Enable or **Disable** headless operation mode through ACPI.

▶ IPMI Configuration

This menu shows static information about the IPMI firmware revision and status of the BMC, as well as options for IPMI configuration.

▶ View BMC System Event Log

Pressing the Enter key will open the following settings. Use the "+" and "-" keys to navigate through the system event log.

Clear BMC System Event Log

Selecting this and pressing the Enter key will clear the BMC system event log.

▶ Set LAN Configuration

Use the "+" and "-" keys to choose the desired channel number. This displays Channel Number and Channel Number Status information.

▶ IP Address

This submenu sets the IP address source as either Static or **DHCP**. Selecting Static allows you to manually set the IP Address, Subnet Mask and Gateway Address.

In the field provided here enter the IP address in the decimal form of xxx.xxx. xxx.xxx with xxx having a value of less than 256 and in decimal form only The IP address and current IP address in the BMC are shown.

▶ MAC Address

In the field provided here enter the MAC address in the hex form of xx.xx. xx.xx.xx.xx with xx in hex form only. The current MAC address in the BMC is shown.

▶ Subnet Mask

In the field provided here enter the Subnet address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current subnet address in the BMC is shown.

▶ Gateway Address

In the field provided here enter the Gateway address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current Gateway address in the BMC is shown.

▶ MPS Configuration

MPS Revision

This option allows you to set the MPS revision for your system. Options include revision 1.1 and **1.4**.

▶ PCI Express Configuration

Relaxed Ordering

Enables or Disables PCI Express Device Relaxed Ordering in the system. Options include **Auto**, Disabled or Enabled.

Extended Tag Field

When this option is enabled, it allows the device to use the 8-bit TAG field as a requester. Options include **Auto**, Disabled or Enabled.

No Snoop

This option enables or disables the PCI Express device No Snoop option. Options include **Auto**, Disabled or Enabled.

Active State Power Management

This setting allows you to Enable or **Disable** the PCI Express L0s and L1 link power states.

Extended Synch

If this option is enabled, it allows the generation of extended synchronization patterns. Options include **Auto**, Disabled or Enabled.

▶ Remote Access Configuration

Remote Access

Use this option to **Enable** or Disable Remote Access in your system. If enabled, the settings below will appear.

Serial Port Number

Use this setting to select the serial port for console redirection. Options include COM1, COM2 or **COM3***. The displayed base address and IRQ for the serial port changes to reflect the selection you make.

Note: Make sure the selected port is enabled.

Serial Port Mode

Selects the serial port settings to use. Options are **(115200 8, n, 1)**, (57600 8, n, 1), (38400 8, n, 1), (19200 8, n, 1) and (09600 8, n, 1).

Flow Control

Selects the flow control to be used for console redirection. Options are **None,** Hardware and Software.

Redirection After BIOS POST

Options are Disable (no redirection after BIOS POST), Boot Loader (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.

Terminal Type

Selects the type of the target terminal. Options are **ANSI**, VT100 and VT-UTF8.

VT-UTF8 Combo Key Support

Allows you to **Enable** or Disable VT-UTF8 combination key support for ANSI/ VT100 terminals.

Sredir Memory Display Delay

Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 sec, 2 secs and 4 secs.

▶ USB Configuration

This submenu displays the Module Version and lists the USB devices that are enabled as well as the following options.

Legacy USB Support

Select "Enabled" to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. "Auto" disabled Legacy support if no USB devices are connected. The options are Disabled, **Enabled** and Auto.

USB 2.0 Controller Mode

Use this setting to configure the USB 2.0 Controller in either **Hi-Speed** (480 Mps) or Full Speed (12 Mps) mode.

BIOS EHCI Hand Off

This is a workaround for OS's without EHCI hand-off support. The EHCI ownership change should be claimed by the EHCI driver. Options are **Enabled** or Disabled.

Legacy USB1.1 HC Support

This option **Enables** or Disables support for USB1.1 HC devices.

▶ USB Mass Storage Device Configuration

This submenu is used to configure USB mass storage class devices.

USB Mass Storage Reset Delay

Use this option to set the number of seconds POST waits for the USB mass storage device after the Start Unit command. Options include 10, **20**, 30 and 40 seconds.

Emulation Type

This sets the emulation type for USB mass storage devices. If Auto, USB devices less than 530 MB will be emulated as Floppy and remaining as Hard Disk drive. The Force FDD option can be used to force a HDD formatted drive to boot as an FDD (example: ZIP drive*).* Options include **Auto**, Floppy, Forced FDD, Hard Disk and CD-ROM.

▶ System Health Monitor

CPU Overheat Temperature

This setting allows you to specify the type of alarm for CPU overheating. Options include The Early Alarm and **The Default Alarm**.

Other items in the submenu are systems monitor displays for the following information:

CPU1 Temperature, CPU2 Temperature, CPU3 Temperature, CPU4 Temperature, System Temperature, Fan 1-9 Reading, Chipset FAN1-2, CPU1 VCore, CPU2 VCore, CPU3 VCore, CPU4 VCore, 3.3V Vcc (V), + 5Vin, +12V Vcc (V), CPU1~4 DIMM Voltage, Chipset SR56x0 Voltage, 3.3V standby, Battery Voltage

▶ System Fan Monitor

This submenu contains lists the system fans and contains RPM information for them.

▶ Fan Speed Control Modes

This submenu allows you to determine how the system will control the speed of the onboard fans. The options are Full Speed/FS (Max Cooling), Performance/PF (Better Cooling), **Balanced/BL** (Balance between performance and energy saving), Energy Saving/ES (Lower Power and Noise).

7-4 PCI/PNP Settings Menu

Clear NVRAM

Select Yes to clear NVRAM during boot-up. The options are Yes and **No**.

Plug & Play O/S

Select Yes to allow the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow AMIBIOS to configure all devices in the system.

PCI Latency Timer

This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.

Allocate IRQ to PCI VGA

Use this option to allocate IRQ to the PCI VGA card. Opiton include **Yes** and No. Selecting **Yes** assigns IRQ to PCI VGA card if the card requests IRQ. Selecting No means the system will not assign IRQ to the PCI VGA card even if the card requests IRQ.

Pallette Snooping

This option Enables or **Disables** Pallette Snooping. If enabled, the system informs the PCI devices that an ISA graphics device is installed in the sytem so the card will function normally.

PCI IDE Busmaster

Use this setting to **Enable** or Disable BIOS enabled uses of PCI Busmastering for reading or writing to IDE drives.

Offboard PCI/ISA IDE Card

Some PCI IDE cards may require this option to be set to the PCI slot number that is holding the card. The Auto setting works for most PCI IDE cards. Options include **Auto**, PCI Slot 1, PCI Slot , PCI Slot 3, PCI Slot 4, PCI Slot 5 and PCI Slot 6.

IRQ3 ~ IRQ15 Settings

These settings specify if IRQ is available to be used by PCI/PnP devices or is reserved for use by legacy ISA devices. Options are **Available** or Reserved.

DMA Channel 0 ~ DMA Channel 7 Settings

These settings specify if a DMA Channel is available to be used by PCI/PnP devices or is reserved for use by legacy ISA devices. Options are **Available** or Reserved.

Reserved Memory Size

This option specifies the size of the memory block reserved for legacy ISA devices. Options include **Disabled**, 16k, 32k or 64k.

HotPlug Reserve I/O Port Size

This option specifies the size of the I/O port block to reserve for HotPlug or CardBus devices. Options include **Auto**, 4K, 8K, 12K, 16K, 20K, 24K and 28K.

HotPlug Reserve Memory Size

This option specifies the size of the memory block to reserve for HotPlug or CardBus devices. Options include **Auto**, 8M, 16M, 32M, 65M, 128MB, 256MB or 512MB.

HotPlug Reserve PFMemory Size

This option specifies the size of the prefetchable memory block to reserve for HotPlug or CardBus devices. Options include **Auto**, 32M, 64M, 128MB, 256MB, 512MB, 1024M or 2048M.

Onboard NIC PXE Option ROM

This option **Enables** or Disables the onboard NIC PXE option ROM.

7-5 Boot Settings Menu

▶ BIOS Settings Configuration

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for the system to boot up. The options are **Enabled** and Disabled.

Quiet Boot

If **Disabled**, normal POST messages will be displayed on boot-up. If Enabled, this display the OEM logo instead of POST messages.

Add On ROM Display Mode

This option sets the display mode for Option ROM. The options are **Force BIOS** or Keep Current.

Bootup Num Lock

This option selects the power-on state for the NUM lock to either **On** or Off.

PS/2 Mouse Support

Use this option to select support for the PS/2 mouse. Options are Disabled, Enabled or **Auto**.

Wait for F1 if Error

This setting controls the system response when an error is detected during the boot sequence. When enabled, BIOS will stop the boot sequence when an error is detected, at which point you will need to press the F1 button to re-enter the BIOS setup menu. The options are **Enabled** and Disabled.

Hit 'DEL' Message Display

Use this option to **Enable** or Disable the "Press DEL to run setup" message in POST.

Interrupt 19 Capture

Select Enabled to allow ROMs to trap Interrupt 19. The options are **Enabled** and Disabled.

▶ Boot Device Priority

This feature allows you to prioritize the boot sequence from the list of available devices. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Hard Disk Drives

This feature allows you to specify the boot sequence from the list of available hard disk drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Removable Drives

This feature allows you to specify the boot sequence from the list of available removable drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ CD/DVD Drives

This feature allows you to specify the boot sequence from the list of available CD/DVD drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Network Drives

This feature allows you to specify the boot sequence from the list of available network drives. A device that is in parenthesis has been disabled in the corresponding type menu.

7-6 Security Settings Menu

AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

Change Supervisor Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Change User Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When "Enabled", AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-7 Chipset Settings Menu

▶ NorthBridge Configuration

▶ Memory Configuration

Channel Interleaving

Selects the channel-interleaving memory scheme when this function is supported by the processor. The options are Disabled or **Auto**.

Enable Clock to All DIMMs

This option allows you to Enable or **Disable** unused clocks to DIMMs even when memory slots are not populated.

Memory Hole Remapping

When "Enabled", this feature enables hardware memory remapping around the memory hole. Options are **Enabled** and Disabled.

CS Sparing Enable

This option will reserve a spare memory rank in each node when enabled. Options are Enable and **Disable**.

Power Down Enable

This option enables or disables DDR power down mode. Options are **Auto**, Enabled and Disabled.

Power Down Mode

This sets the DDR power down mode. Options are **Auto**, Channel and Chip Select.

DRAM Parity Enable

This sets the DRAM Parity Enable to either **Auto**, Enabled and Disabled.

Bank Swizzle Mode

This sets the Bank Swizzle Mode to either **Auto**, Enabled and Disabled.

▶ ECC Configuration

ECC Mode

This submenu sets the level of ECC protection. Options include Disabled, **Basic**, Good, Super, Max and User. Selecting User activates the other options for user setting.

Note: The "Super" ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8-hours.

DRAM ECC Enable

This setting allows hardware to report and correct memory errors automatically, maintaining system integrity. Options are **Enabled** or Disabled.

DRAM Scrub Redirect

This setting allows the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is off. Options are **Enabled** or Disabled.

4-Bit ECC Mode

Allows the user to enabled 4-bit ECC mode (also known as ECC Chipkill). Options are **Enabled** and Disabled.

DRAM BG Scrub

Corrects memory errors so later reads are correct. Options are Disabled and various times in nanoseconds and microseconds. The default is **163.8us**.

Data Cache BG Scrub

Allows L1 cache RAM to be corrected when idle. Options are Disabled and various times in nanoseconds and microseconds. The default is **2.56us**.

L2 Cache BG Scrub

Allows L2 cache RAM to be corrected when idle. Options are Disabled and various times in nanoseconds and microseconds. The default is **2.56us**.

L3 Cache BG Scrub

Allows L3 cache RAM to be corrected when idle. Options are Disabled and various times in nanoseconds and microseconds. The default is **2.56us**.

▶ DRAM Timing Configuration

DRAM Timing Config

This setting specifies the DRAM timing configuration. Options are **Auto** and Manual.

Memory Timing Parameters

This selects the which node's timing parameters to display. Options are **CPU Node 0** or CPU Node 1.

▶ SouthBridge Configuration

▶ SB Debug Configuration

A15 ECOs

This setting **Disables** or Enables A15 ECOs.

Port 0 ~ Port 5 ESP

These settings allow you to set Port 0 through Port 5 ESP help as either ESP or **ISP**.

Dis #THRMTRIP before KBRst

This setting allows you to **Enable** or Disable Dis #THRMTRIP before KBRst.

SATA-IDE Ports Auto Clk Ctrl

This option, when enabled, will shutdown the clocks for unused SATA prots in IDE mode, IDE->AHCI and IDE->AMD_AC modes. This will enable some power savings, but please note that if you shutdown the clock then the hotplug for that port will not work. Options are **Disabled** or Enabled.

SATA-AHCI Ports Auto Clk Ctrl

This option, when enabled, will shutdown the clocks for unused SATA prots in AHCI and AMD-AHCI modes. This will enable some power savings, but please note that if you shutdown the clock then the hotplug for that port will not work. Options are **Disabled** or Enabled.

SATA Port 0 ~ Port 5 Mode

This setting forces the SATA selected SATA port to run at GEN1 mode if this option is set to GEN1. Setting this option to **Auto** will leave the port to run at the default mode.

OHCI/EHCI HC Device Functions

These settings allow you to either **Enable** or Disable functions for OHCI or EHCI bus devices.

On Chip SATA Channel

This setting allows you to **Enable** or Disable the OnChip SATA channel.

On Chip SATA Type

Use this setting to set the On Chip SATA type. Options include **Native IDE**, RAID, AHCI and Legacy IDE.

SATA IDE Combined Mode

This setting allows you to **Enable** or Disable the SATA IDE combined mode.

PATA Channel Configuration

This allows you to set PATA channel configuration. Options include **SATA as Primary** or SATA as secondary.

Power Saving Features

Use this option to Enable or **Disable** power down saving features in the Southbridge chipset. This feature should be enabled for mobile systems and disabled for desktop systems. See the *AMD SB700 Power Saving* document for more details.

▶ RD890 Configuration

▶ PCI Express Configuration

▶ Port 02 ~ Port 13 Features

This submenu allows you to set the features for Ports 02 through 13 in the system. Each port submenu allows you to define the same settings below.

Gen 2 High Speed Mode

This setting allows you to set the Gen 2 high-speed mode. Options include **Auto**, Disabled, Software Initiated and Advertised RC.

Link ASPM

Use this setting to configure the Link ASPM. Options include **Disabled**, L0s, L1, L0s & L1, L0 Downstream and L0 Downstream + L1.

Note: For ATI GFx Card M2x use L1 only. For ATI GFx Card M5x use both L0s & L1.

Link Width

Use this setting to configure the Link Width. Options include **Auto**, x1, x2, x4, x8 and x16.

Slot Power Limit, W

Use this setting to configure the Slot Power Limit power. The user can adjust this value using the **+** and **-** keys. The default is **75**.

Compliance Mode

This setting allows you to Enable or **Disable** the Compliance Mode.

Remap Port Device Number

This setting allows you remap the Port Device number. Options include **Auto** and port numbers between 2 and 13.

L1 Immediate ACK

This setting allows you to Enable or **Disable** L1 ACK. When enabled, the L1 will be ACK'd immediately.

Lane Reversal

Use this setting to Enable or **Disable** Lane Reversal.

Hot Plug Support

Use this setting to set Hot Plug Support. Options include **Disabled** and Native.

▶ NB-SB Port Features

NB-SB Link APSM

Use this to set the NB-SB Link ABSM. Options include **L1** and Disabled.

Link Width

This setting allows you to set the Link Width for the NB-SB port. Options include **Auto**, x1, x2 and x4.

NP NB-SB VC1 Traffic Support

Use this setting to **Disable** or Enable NP NB-SB VC1 traffic support.

Compliance Mode

Use this setting to Enable or **Disable** Compliance Mode for the NB-SB port.

▶ GPP1 ~ GPP3b Core Settings

These submenus allow you to specify GPP core settings. Each submenu allows you to define the same settings listed below.

Core Configuration

This setting allows you to configure core configuration. Options include **Auto**, 1x16 and 2x8.

Powerdown Unused Lanes

This setting allows you to **Enable** or Disable the powerdown of unused lanes.

Turnoff Off PLL During L1/L23

This setting allows you to **Enable** or Disable turning off PLL during L1/L23.

TX Drive Strength

Use this setting to configure TX drive strength. Options include Auto, 26mA, 20mA, 22mA and **24mA**.

TXCLK Clock Gating in L1

Use this setting to **Enable** or Disable the TXCLK clock gating in L1.

LCLK Clock Gating in L1

Use this setting to **Enable** or Disable the LCLK clock gating in L1.

▶ SB Core Setting

TX Drive Strength

Use this setting to configure TX drive strength. Options include **Auto**, 26mA, 20mA, 22mA and 24mA.

TXCLK Clock Gating in L1

Use this setting to **Enable** or Disable the TXCLK clock gating in L1.

LCLK Clock Gating in L1

Use this setting to **Enable** or Disable the LCLK clock gating in L1.

▶ Debug Option

Peer to Peer Among GPP1/GPP2

Use this setting enable or disable Peer to Peer among GPP1/GPP2. Options include **Auto**, Enabled and Disabled.

Reset to Training Delay (ms)

Use the +/- keys to change the reset to training delay time setting. The default is **50**.

Receiver Detection Pooling (ms)

Use the +/- keys to change the receiver detection pooling time setting. The default is **180**.

Hide Unused PCIE P2P Bridges

Use this setting to **Enable** or Disable the hiding of unused PCIE P2P bridges.

GFX Card Workaround

This setting allows you to **Enable** or Disable the GFX Card workaround on your system.

▶ Debug Bus Configuration

PCIE Debug Bus

This setting Enables or **Disables** PCIE debugging of the bus.

▶ Hyper Transport Configuration

HT Extended Address

This setting allows you to Enable or Disable the HT extended address. Options include Enabled, **Disabled** and Auto.

HT3 Link Power State

This setting allows you to configure the HT3 Link power state. Options include **Auto**, LS0, LS1, LS2 and LS3.

Unit ID Clumping

Use this setting to configure Unit ID clumping. Options include **Disabled**, Auto, UnitID 2/3, UnitID B/C and UnitID 2/3 & B/C.

HT Link Tristate

This setting allwos you to configure the HT Link Tristate. Options include **Auto**, Disabled, CAD/CTL and CAD/CTL/CLK.

NB Deemphesis Level

Use this to set the NB deemphesis level. Options include Disabled, 0.4 dB, 1.32 dB, -2.08dB, **3.1 dB**, 4.22 dB, 5.50 dB and 7.05 dB.

IOMMU

This setting is used to disable or set the GART size in systems without AGP. Options include AGP Present, **Disabled**, 32 MB, 64 MB, 128 MB, 256 MB, 512 MB and 1 GB.

Primary Video Controller

Use this setting to specify the primary video controller boot order. Options include **PCIE-GPP1-GPP2-GPP3a-PCI**, PCIE-GPP2-GPP1-GPP3a-PCI, PCIE-GPP3a-GPP1-GPP2-PCI or PCI-PCIE-GPP1-GPP2-GPP3a.

PCI Spread Spectrum

Use this setting to Enable or **Disable** PCI Spread Spectrum in the system.

▶ Debug Option

Memory Decod on Sec. 6FX

Use this option to set memory decod on sector 6FX. Options are **Disabled** or Force.

IOC Peer-to-Peer Mode

Use this option to set the IOC peer-to-peer mode. Options include **Auto**, Default, Mode1 and Mode2

Northbridge Interrupt Pin

This option Enables or **Disables** the Northbridge Interrupt Pin.

7-8 Exit Menu

Select the Exit tab from AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then Select "OK" to allow BIOS to automatically load the Optimal Defaults as the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not maximum performance.

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
1 long, 8 short	Video error	Video adapter disabled or missing

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing the Windows OS for a RAID System

1. Insert Microsoft's Windows XP/2003/2008/Vista Setup CD in the CD driver and the system will start booting up from CD.

2. Press the <F6> key when the message "Press F6 if you need to install a third party RAID driver" displays.

3. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette "ITE RAID Windows XP/2003/2008/Vista Driver for IDE" into the floppy drive and press the <Enter> key.

5. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

6. Insert the driver diskette into the drive and press the <Enter> key.

7. Choose the LSI SAS RAID driver indicated in the Windows OS Setup screen, and press the <Enter> key.

8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

9. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then, continue the Windows OS installation.

10. After the Windows OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows OS for a Non-RAID System

1. Insert Microsoft's Windows OS Setup CD in the CD-ROM drive and the system will start booting up from the CD.

2. Continue with the installation. The Windows OS Setup screen will display.

3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.

4. After the installation has completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your system into the CD-ROM drive during system boot and the main screen will display.

Appendix C

System Specifications

Processors

Quad AMD Opteron 6100 series (Socket G34 type) processors

Note: please refer to our website for details on supported processors.

Chipset

One AMD SR5690 chipset and one SP5100 Southbridge chipset

BIOS

16 Mb AMIBIOS SPI Flash ROM

Memory Capacity

Thirty-Two (32) single/dual/tri/quad channel DIMM slots supporting up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/ non-ECC SDRAM

Note: interleaved memory requires DIMMs to be installed in pairs - refer to Section 5-6 for details.

SATA Controller

AMD SR5690 on-chip controller to support six 3 Gb/s Serial ATA (RAID 0, 1, 10 supported)

SAS Controller

Onboard LSI-2008 SAS2 controller for eight SAS drives (RAID 0, 1 and 10 supported). RAID 5 is supported with the use of an optional RAIDKey for RAID 5 SAS support (only on H8QG6-F serverboard)

Drive Bays

Six (6) hot-swap drive bays to house six (6) standard SAS drives

Peripheral Drives/Bays

One (1) slim DVD-ROM drive

Expansion Slots

Supports the use of two PCI-E x16, one PCI-E x8 (in a x16 slot), one PCI-E x8 or one UIO slot.

Serverboard

H8QG6/i-F (proprietary ATX form factor)
Dimensions: 16.48" x 13" (418 x 330 mm)

Chassis

SC828TQ-R1200LP (2U rackmount)

Dimensions (both): (WxHxD) 17.2 x 3.5 x 27.75 in. (473 x 89 x 705 mm)

Weight

Gross (Bare Bone): 65.5 lbs. (29.8 kg.)

System Cooling

Six heavy-duty 8-cm cooling fans (fan speed controlled by BIOS setting)

System Input Requirements

AC Input Voltage: 180-240 VAC
Rated Input Current: 7.2A (180V) to 9.5 (240V)
Rated Input Frequency: 50-60 Hz
Efficiency: 80+ (Gold Level)

Power Supply

Rated Output Power: 1400W w/PMBus (Part# PWS-1K41F-1R)
Rated Output Voltages: +12V (116A), +5Vsb (6A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-Operating Temperature: -5º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-Operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:
FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant
UL Listed (USA)
CUL Listed (Canada)
TUV Certified (Germany)
CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

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